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Some Phytoseiid Mites (Arachnida: Acari: Phytoseiidae) from West Malaysia

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Seventeen species of the mite family Phytoseiidae are reported from West Malaysia. Of these, 13 named species are recorded for the first time in Malaysia. *Amblyseiulella thoi* sp. nov. and *Platyseiella acuta* sp. nov. are described. *Phytoseius* (*Phytoseius*) *huangi* Ehara, 1970 is a junior synonym of *Phytoseius hawaiiensis* Prasad, 1968.

Key Words: Phytoseiidae, Gamasina, Acari, Malaysia, fauna, new species.

Mites of the family Phytoseiidae are found in many cases in association with phytophagous mites of the families Tetranychidae, Tenuipalpidae, Eriophyidae, and Tarsonemidae, and are commonly regarded as facultative (rarely obligatory) predators of these injurious mites. Therefore, phytoseiid mites have been much studied in the fields of taxonomy, ecology, biological control of mite pests, etc. in many parts of the world.

As far as I am aware, only six species of Phytoseiidae have been recorded previously from Malaysia (Evans 1953; Muma 1967): *Typhlodromus asiaticus* Evans, 1953, *T. newsami* Evans, 1953, *T. ovalis* Evans, 1953, *T. irregularis* Evans, 1953, *Cydnodromus longispinosus* (Evans, 1952), and *Typhlodromips johoreae* Muma, 1967. In addition, 10 phytoseiid species have been recorded from Singapore (Corpuz-Raros 1995b).

In the present paper 17 species of phytoseiid mites, including two new species, are reported from West Malaysia. The materials on which this study was based were collected by me from a variety of plants in this region during August of 1986.

The setal nomenclature follows that of Rowell *et al.* (1978). The measurements are given in micrometers, and those of the holotypes of the new species are in parentheses following the means. The holotypes will be deposited in the collection of the Entomology Division, Forest Research Institute of Malaysia, Kepong, Selangor, Malaysia.

Amblyseius* (*Neoseiulus*) *longispinosus (Evans, 1952)
(Fig. 1)

Typhlodromus longispinosus Evans, 1952: 413, figs 1, 2. [Type locality: Bogor, Java, Indonesia; type habitat: *Manihot utilissima* Pohl.]
Typhlodromus (*Amblyseius*) *longispinosus*: Chant 1959: 74, figs 114, 115.
Amblyseius (*Amblyseius*) *longispinosus*: Ehara 1966: 21 (in part).
Cydnodromus longispinosus: Muma 1967: 267.

Amblyseius longispinosus: Schicha 1975: 103, figs 10–17.
Neoseiulus longispinosus: Beard 2001: 85, fig. 6e–g.

The female of this species differs from that of *A.* (*N.*) *womersleyi* Schicha, 1975 in having seta S5 about one third as long as S4, as opposed to slightly shorter than S4. The spermatheca is as illustrated (Fig. 1).

Specimens examined. One ♀ and 1♂, Kepong, 8-VIII-1986, on *Merremia umbellata* Hall. i. (coll. by S. Ehara; usually omitted below); 5♀, Port Dickson, 17-VIII-1986, on *Manihot glaziovii* Muell. Arg.

Distribution. China, Taiwan, Thailand, Malaysia (Muma 1967), Philippines, Indonesia, India, Pakistan, Papua New Guinea.

Amblyseius* (*Neoseiulus*) *newsami (Evans, 1953)
(Fig. 2)

Typhlodromus newsami Evans, 1953: 450, figs 1–4. [Type loc.: Malaya; type habitat: rubber plant]
Typhlodromus (*Amblyseius*) *newsami*: Chant 1959: 96, figs 220, 221.
Amblyseius (*Amblyseius*) *newsami*: Ehara 1966: 24.
Amblyseius newsami: Schicha 1982: 45, figs 1–6; 1987: 91, pl. 45.

The female of *A.* (*N.*) *newsami* is characterized by having setae j1 and Z5 much larger than the remaining dorsal setae on the idiosoma, and by the strongly constricted ventrianal shield. This species is very similar to *A.* (*N.*) *cantonensis* Schicha, 1982 from China but differs in having the spermathecal atrium incorporated into the base of the tubular cervix (Fig. 2), not merely attached to the base of the cervix (Schicha 1982).

A Chinese mite so far reported under the name *A. newsami* (Ehara and Lee 1971; Tseng 1983; Chen *et al.* 1984; Wu *et al.* 1997) should be referred to *A. cantonensis* (Schicha 1982, 1987); moreover, *A. cantonensis* from Thailand was misidentified as *A. newsami* (Ehara and Bhandhufalck 1977).

Specimens examined. Five ♀, campus of Univ. of Malaya, Kuala Lumpur, 23-VIII-1986, on *Lagerstroemia speciosa* Pers.

Distribution. Malaysia.

Amblyseius* (*Neoseiulus*) *anuwati Ehara and Bhandhufalck, 1977
(Fig. 3)

Amblyseius (*Amblyseius*) *anuwati* Ehara and Bhandhufalck, 1977: 63, figs 77–83. [Type loc.: Prew, Thailand; type habitat: coffee]
Amblyseius anuwati: Chen *et al.* 1984: 341, fig. 14 (39); Wu *et al.* 1997: 76, fig. 46.

The female of this species is characterized by the tubular spermathecal cervix that is long, narrow, and coiled (Fig. 3) and by the posterior margin of the sternal shield, which is slightly convex medially.

Specimens examined. Two ♀, Kepong (Forest Research Institute of Malaysia:

garden and experimental forest), 7-VIII-1986, on *Lantana camara* L.

Distribution. China, Hainan Island, Taiwan, Thailand, Malaysia (new record).

Amblyseius (Amblyseius) largoensis (Muma, 1955)
(Fig. 4)

Amblyseiopsis largoensis Muma, 1955: 266, figs 10–12. [Type loc.: Key Largo, Florida, U.S.A.; type habitat: lime]

Amblyseius largoensis: Muma *et al.* 1971: 69, figs 247–252; McMurtry and Moraes 1984: 34, figs 20, 26; Schicha 1987: 51, pl. 12; Denmark and Muma 1989: 55, figs 266–272.

Amblyseius (*Amblyseius*) *largoensis*: Ehara and Bhandhufalck 1977: 67, fig. 89; Ehara 1977: 35, fig. 4.

Three Malaysian species, *A. largoensis*, *A. herbicolus*, and *A. eharai*, are assigned to the *largoensis* species group (cf. McMurtry and Moraes 1984; Ehara and Amano 1998). *Amblyseius largoensis* differs from the other two species in having the cervix of the spermatheca long and slender, and parallel-sided (Fig. 4).

Specimens examined. One ♀, Kepong (FRIM), 7-VIII-1986, on *Hopea helfer helfer* Brandis; 3♀, Port Dickson, 15-VIII-1986, on *Hibiscus tiliaceus* L.; 2♀, Port Dickson, 17-VIII-1986, on *Hevea brasiliensis* Muell. Arg.; 1♀, campus of Univ. Pertanian Malaysia, Serdang, 19-VIII-1986, on a palm; 6♀ and 1♂, Kuala Lumpur, 24-VIII-1986, on a garden bamboo.

Distribution. China, Hainan Island, Thailand, Malaysia (new record), Singapore, India, Africa, U.S.A., Mexico, Guatemala, Jamaica, Bahamas, Puerto Rico, Papua New Guinea, New Caledonia, Australia, Tahiti, etc.

Amblyseius (Amblyseius) herbicolus Chant, 1959
(Fig. 5)

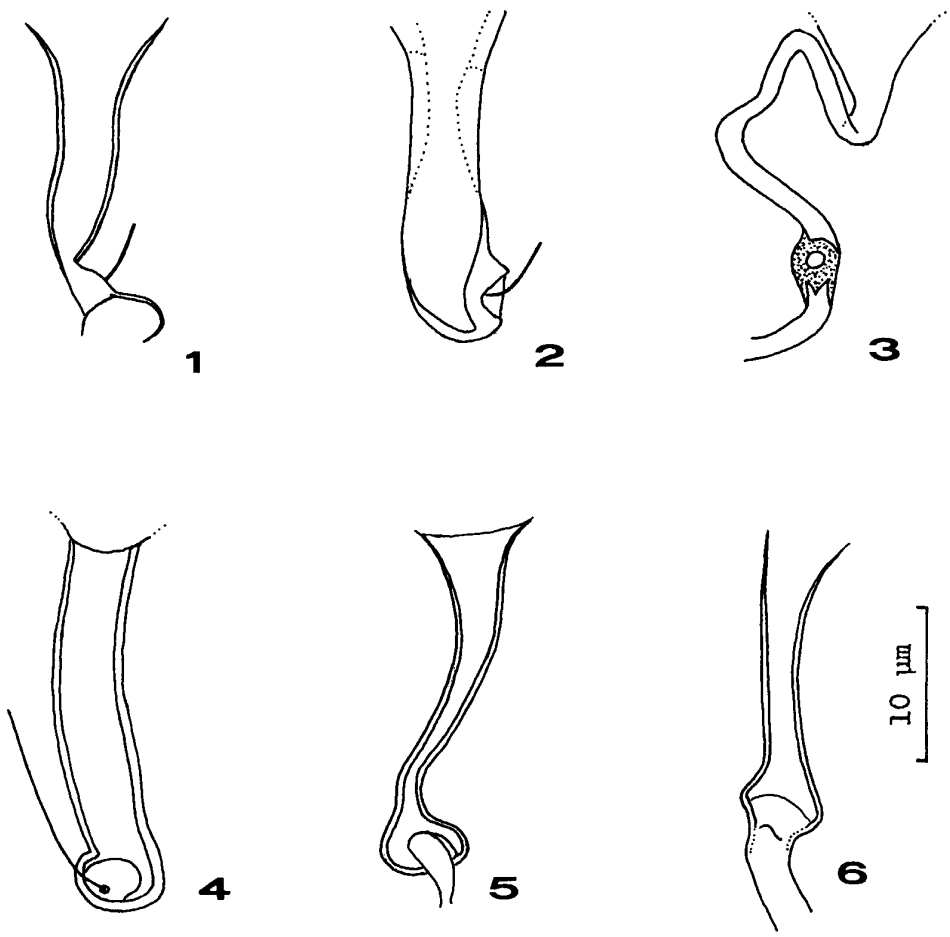
Typhlodromus (*Amblyseius*) *herbicolus* Chant, 1959: 84, fig. 164; Denmark and Muma 1989: 59, figs 294–298. [Type loc. and type habitat: "bromeliad imported from Portugal at Boston, Massachusetts, U.S.A."]

Amblyseius deleoni Muma and Denmark, 1971 in Muma *et al.* 1971: 68, figs 242–246. [Type loc.: Fort Pierce, Florida; type habitat: citrus] Synonymy by Daneshvar and Denmark (1982).

The female of *A. herbicolus* may be recognized by the spermathecal cervix that is long and gradually flares distally, the atrium that is much wider than the proximal portion of the cervix (Fig. 5), and the nearly straight posterior margin of the sternal shield.

Specimens examined. Thirteen ♀ and 1♂, Kepong (FRIM), 5-VIII-1986, on *Dacrydium beccarii* Parl.; 3♀, Kepong (FRIM), 7-VIII-1986, on *Hopea helfer helfer* Brandis; 1♀, Kepong (FRIM), 12-VIII-1986, on *Sandoricum koetjape* (Burm. f.) Merr.; 1♀, Kepong (FRIM), 21-VIII-1986, on *Ficus maclellandi* King.

Distribution. China, Hainan Island, Taiwan, Malaysia (new record), Singa-



Figs 1–6. Spermathecae. 1, *Amblyseius* (*Neoseiulus*) *longispinosus*; 2, *A.* (*Typhlodromips*) *newsami*; 3, *A.* (*T.*) *anuwati*; 4, *A.* (*A.*) *largoensis*; 5, *A.* (*A.*) *herbicolus*; 6, *A.* (*A.*) *eharai*.

pore, Philippines, India, Pakistan, Europe, Africa, North America, South America, West Indies, Australia.

Amblyseius* (*Amblyseius*) *eharai Amitai and Swirski, 1981
(Fig. 6)

Amblyseius eharai Amitai and Swirski, 1981: 60, figs 1–3, 6–8, 12–13; McMurtry and Moraes 1984: 35, figs 19, 23; Ehara and Amano 1993: 16, fig. 8. [Type loc.: Tai Po Hui, New Territories, Hong Kong; type habitat: *Euphoria longana* Lam.]
Amblyseius (*Amblyseius*) *eharai*: Ehara *et al.* 1994: 127, figs 1–7; Ehara and Amano 1998: 38, figs 5–9, 16, 29, 42.
Amblyseius largoensis [*nec* Muma]: Ehara 1959: 293, figs 17, 18; 1961: 96, fig. 8.
Amblyseius (*Amblyseius*) *deleoni* [*nec* Muma and Denmark]: Ehara 1977: 34, figs 1, 2.

The female of this species is distinctive in the spermathecal cervix that is tubular, of medium length, and flares distally, the atrium that is noticeably wider than the proximal portion of the cervix (Fig. 6), and the posterior margin of the

sternal shield, which ranges in shape from convex to protruded mesially (cf. Ehara *et al.* 1994, figs 1–7).

Specimens examined. Seven ♀ and 2♂, Kepong (FRIM), 5-VIII-1986, on *Shorea glauca* King; 1♀, Kepong (FRIM), 6-VIII-1986, on *Bauhinia purpurea* L.

Distribution. Japan, Korea, China, Taiwan, Malaysia (new record).

Amblyseius (Amblyseius) tamatavensis Blommers, 1974
(Figs 7–14)

Amblyseius (Amblyseius) tamatavensis Blommers, 1974: 144, figs 6–12. [Type loc.: Ivoloina, near Tamatave, Madagscar; type habitat: *Citrus (Papeda) hystrix* De Candolle]

Amblyseius tamatavensis: Schicha 1981: 40; 1987: 54, pl. 16; Denmark and Muma 1989: 13, figs 37–43.

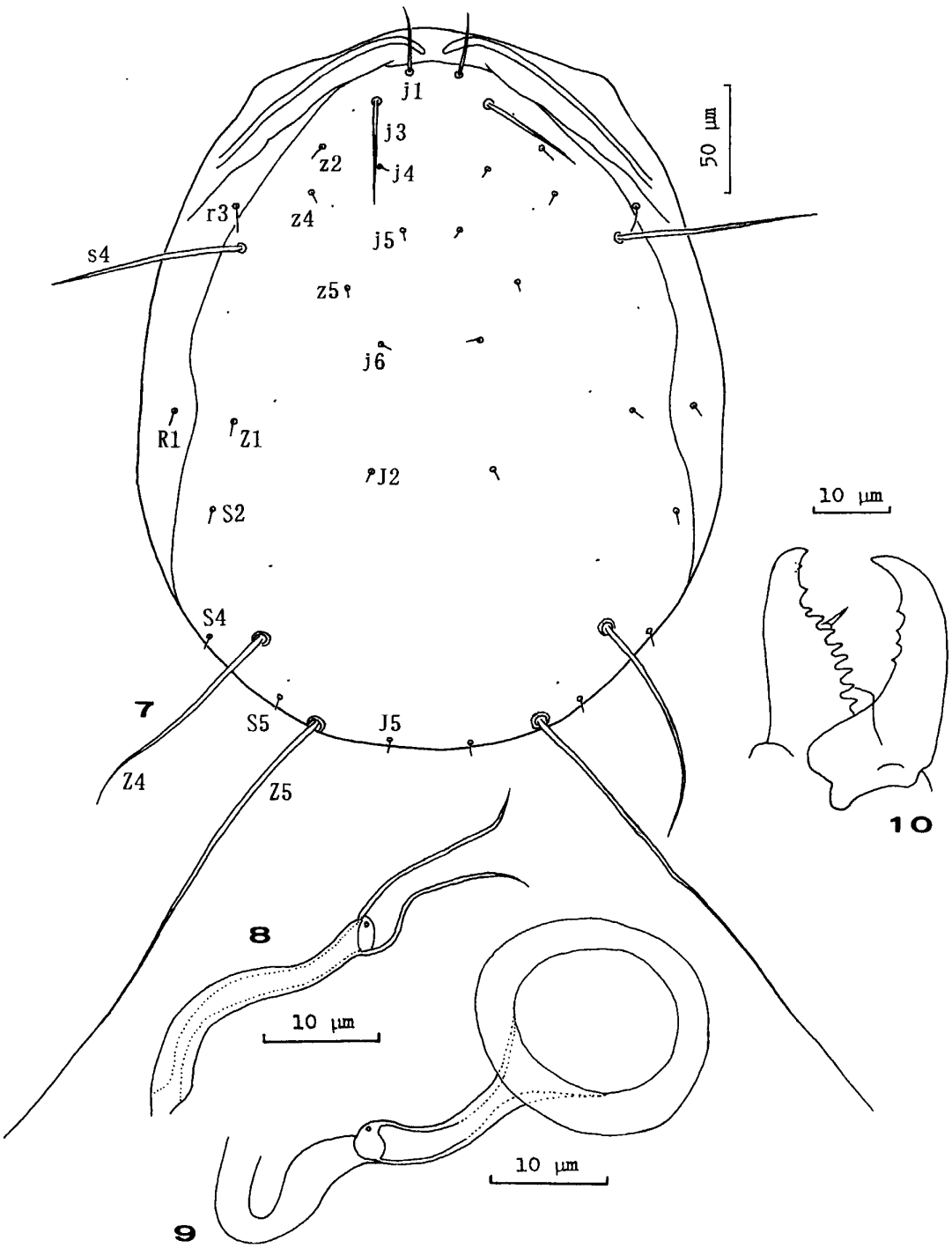
Amblyseius (Amblyseius) maai Tseng, 1976: 123, figs 78–83. [Type loc.: Tainan Hsien, Taiwan; type habitat: pineapple] Synonymy by Denmark and Muma (1989).

Amblyseius aegyptiacus Denmark and Matthysse, 1981 in Matthysse and Denmark 1981: 343, figs 1–4. [Type loc.: Moor Plantation, Ibadan, Nigeria; type habitat: *Solanum incanum* L.] Synonymy by Denmark and Muma (1989).

Female. Dorsal shield smooth, with at least 6 pairs of solenostomes. Setae on dorsal shield (Fig. 7): s4 very long, smooth; Z4 and Z5 very long, with minute barbs; j1 and j3 long, smooth; remaining setae much smaller, smooth. Seta r3 much longer than R1, both setae smooth. Peritreme extending anterior to seta j1; posterior extension of peritrematal shield with termination as illustrated (Fig. 13). Sternal shield with posterior margin nearly straight, with 3 pairs of setae (Fig. 11). Ventrianal shield nearly pentagonal, longer than wide, approximately as wide as genital shield (Fig. 12); 3 pairs of preanal setae; pair of crescentic solenostomes behind and slightly mesad of setae JV2. Two pairs of slender metapodal platelets (Fig. 12). Cervix of spermatheca tubular, somewhat dilated proximally; atrium incorporated into proximal portion of cervix; major duct approximately as wide as cervix (Figs 8, 9). Fixed digit of chelicera multidentate; movable digit with 4 or 5 teeth (Fig. 10). Chaetotaxic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with 1 macroseta each on genu, tibia, and basitarsus (Fig. 14). Measurements: length of idiosoma 341, width of idiosoma 274, length of dorsal shield 332, width of dorsal shield 237; lengths of setae (mean±SE, n=10): j1 32.9±0.6, j3 55.1±0.8, j4 5.1±0.1, j5 4.0±0.2, j6 5.4±0.2, J2 5.5±0.1, J5 6.5±0.3, z2 7.1±0.3, z4 7.6±0.2, z5 4.0±0.1, Z1 6.2±0.1, Z4 111.2±1.6, Z5 230.4±2.1, s4 88.3±1.2, S2 7.1±0.2, S4 6.6±0.2, S5 6.7±0.2, r3 13.9±0.2, R1 7.0±0.2, JV5 81.3±1.7; macrosetae on leg IV: genu 108.3±1.9, tibia 73.7±1.6, basitarsus 69.4±0.9.

Male. Not available.

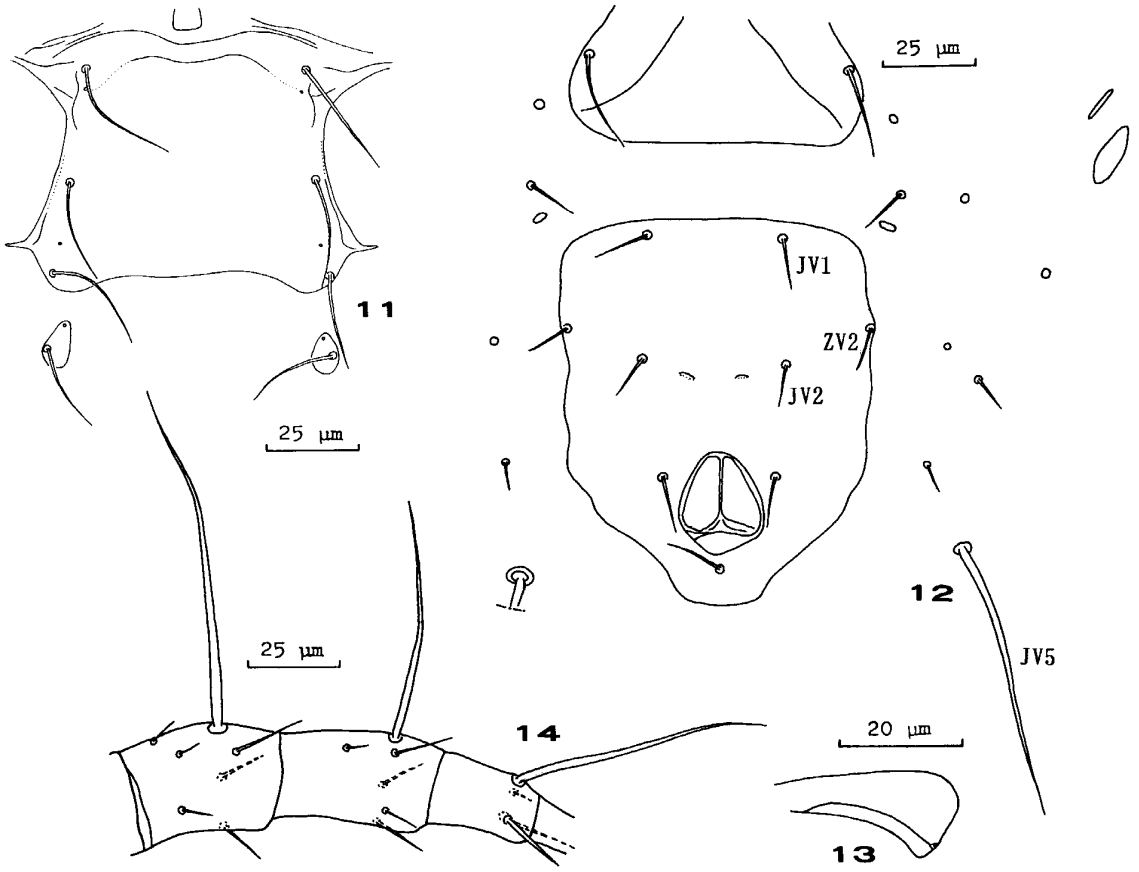
Specimens examined. Eight ♀, Kepong (FRIM), 7-VIII-1986, on *Lantana camara*; 1♀, Kepong, 8-VIII-1986, on cassava; 3♀, Port Dickson, 15-VIII-1986, on a fern; 5♀, Kepong, 8-VIII-1986, on *Merremia umbellata* Hall. i.; 8♀, Kepong (FRIM), 11-VIII-1986, on *Juniperus chinensis* L.; 2♀, Kepong (FRIM), 5-VIII-1986, on *Araucaria cunninghamii* D. Don; 3♀, Kepong (FRIM), 6-VIII-1986, on *Thyrsostachys siamensis* Gamb.; 3♀, Kepong (FRIM), 21-VIII-1986, on *Acalypha* sp.



Figs 7–10. *Amblyseius* (*A.*) *tamatavensis* (♀). 7, dorsum of idiosoma; 8, 9, spermatheca; 10, chelicera.

Distribution. Taiwan, Malaysia (new record), Singapore, Java, Philippines, Madagascar, Papua New Guinea, Australia, New Caledonia, New Hebrides, Fiji, Samoa.

Remarks. This species is distinctive in the unique structure of the spermatheca.



Figs 11–14. *Amblyseius* (*A.*) *tamatavensis* (♀). 11, sternal shield; 12, posterior ventral surface; 13, caudal termination of peritrematal shield; 14, genu, tibia, and basitarsus of leg IV.

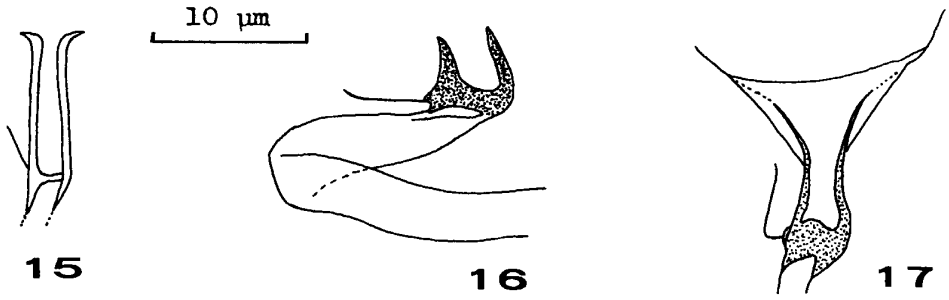
Amblyseius* (*Amblyseius*) *cinctus Corpuz and Rimando, 1966
(Fig. 15)

Amblyseius cinctus Corpuz and Rimando, 1966: 119, fig. 3; Chen *et al.* 1984: 344, fig. 14 (43); Denmark and Muma 1989: 103, figs 549–555; Schicha and Corpuz-Raros 1992: 35, pl. 10; Wu *et al.* 1997: 58, fig. 29. [Type loc.: Gamu, Isabela, Philippines; type habitat: *Panicum pilipes* Nees]
Amblyseius (*Amblyseius*) *cinctus*: Ehara and Bhandhufalck 1977: 70, figs 99–106.

The spermatheca of *A. cinctus* is small and subparallel-sided, and the cervix, atrium, and distal portion of the major duct are united to form a distinctive H-shaped organ (Fig. 15). The ventrianal shield of the female is nearly pentagonal; its preanal pores are approximately aligned with setae JV2.

Specimens examined. Five ♀, Kepong (FRIM), 6-VIII-1986, on *Thyrsostachys siamensis*; 10♀, 7-VIII-1986, other data as for the above; 3♀, Kepong (FRIM), 11-VIII-1986, on *Juniperus chinensis*.

Distribution. China, Hainan Island, Thailand, Malaysia (new record), Singapore, Philippines.



Figs 15–17. Spermathecae. 15, *Amblyseius* (*A.*) *cinctus*; 16, *A.* (*A.*) *paraaerialis*; 17, *A.* (*Euseius*) *aizawai*.

Amblyseius* (*Amblyseius*) *paraaerialis Muma, 1967
(Fig. 16)

Amblyseius paraaerialis Muma, 1967: 270, figs 10–13; Chen *et al.* 1984: 343, fig. 14 (42); Denmark and Muma 1989: 128, figs 682–686. [Type loc.: Palghat, Kerala, India; type habitat: citrus]
Amblyseius (*Amblyseius*) *paraaerialis*: Ehara and Bhandhufalck 1977: 68, figs 92–98.

The spermathecal cervix is U-shaped and thick-walled, the atrium is incorporated into the base of cervix, and the major duct is approximately as wide as the cervix (Fig. 16). The ventrianal shield of the female is nearly pentagonal.

Specimen examined. One ♀, Port Dickson, 17-VIII-1986, on undetermined tree.

Distribution. Hainan Island, Thailand, Malaysia (new record), India.

Amblyseius* (*Euseius*) *aizawai Ehara and Bhandhufalck, 1977
(Fig. 17)

Amblyseius (*Amblyseius*) *aizawai* Ehara and Bhandhufalck, 1977: 59, figs 56–62. [Type loc.: Chiang Dao, Thailand; type habitat: papaya]
Amblyseius aizawai: Chen *et al.* 1984: 329, fig. 14 (25).
Euseius aizawai: Wu *et al.* 1997: 119, fig. 87.

The female of this species may be recognized by seta j1 being noticeably longer than j3 and s4, and the dorsal shield being smooth except for anterior narrow areas along its lateral margins. The spermatheca is as illustrated (Fig. 17).

Specimens examined. Seven ♀, Kepong (FRIM), 6-VIII-1986, on *Bauhinia purpurea*.

Distribution. China, Hainan Island, Thailand, Malaysia (new record).

Phytoscutus salebrosus (Chant, 1960)

Typhlodromus (*Amblyseius*) *salebrosus* Chant, 1960: 58, figs 1–4. [Type loc.: Jarhat,

Assam, India; type habitat: *Citrus* sp.]
Phytoscutella salebrosus: Muma 1961: 275.
Amblyseius (*Amblyseius*) *salebrosus*: Ehara 1966: 23.
Amblyseius (*Phytoscutella*) *salebrosus*: Ehara and Bhandhufalck 1977: 73, figs 113–118.
Phytoscutus salebrosus: Yoshida-Shaul and Chant 1997: 227, figs 13–17.
Phytoscutus taoi Lo, 1970: 49, figs 2–9. [Type loc.: Mushan, Taipei, Taiwan; type habitat: citrus] Synonymy by Ehara and Bhandhufalck (1977).

This is a very distinctive, stout, and heavily sclerotized species. The lateral areas of the dorsal shield curve ventrally and have distinct reticulations. All the ventral shields are distinctive.

Specimens examined. One ♀ and 1♂, Kepong (FRIM), 7-VIII-1986, on *Thyrsostachys siamensis*; 1♀, Kepong (FRIM), 7-VIII-1986, on *Gigantochloa levis* Merr.

Distribution. Taiwan, Thailand, Malaysia (new record), Philippines, India.

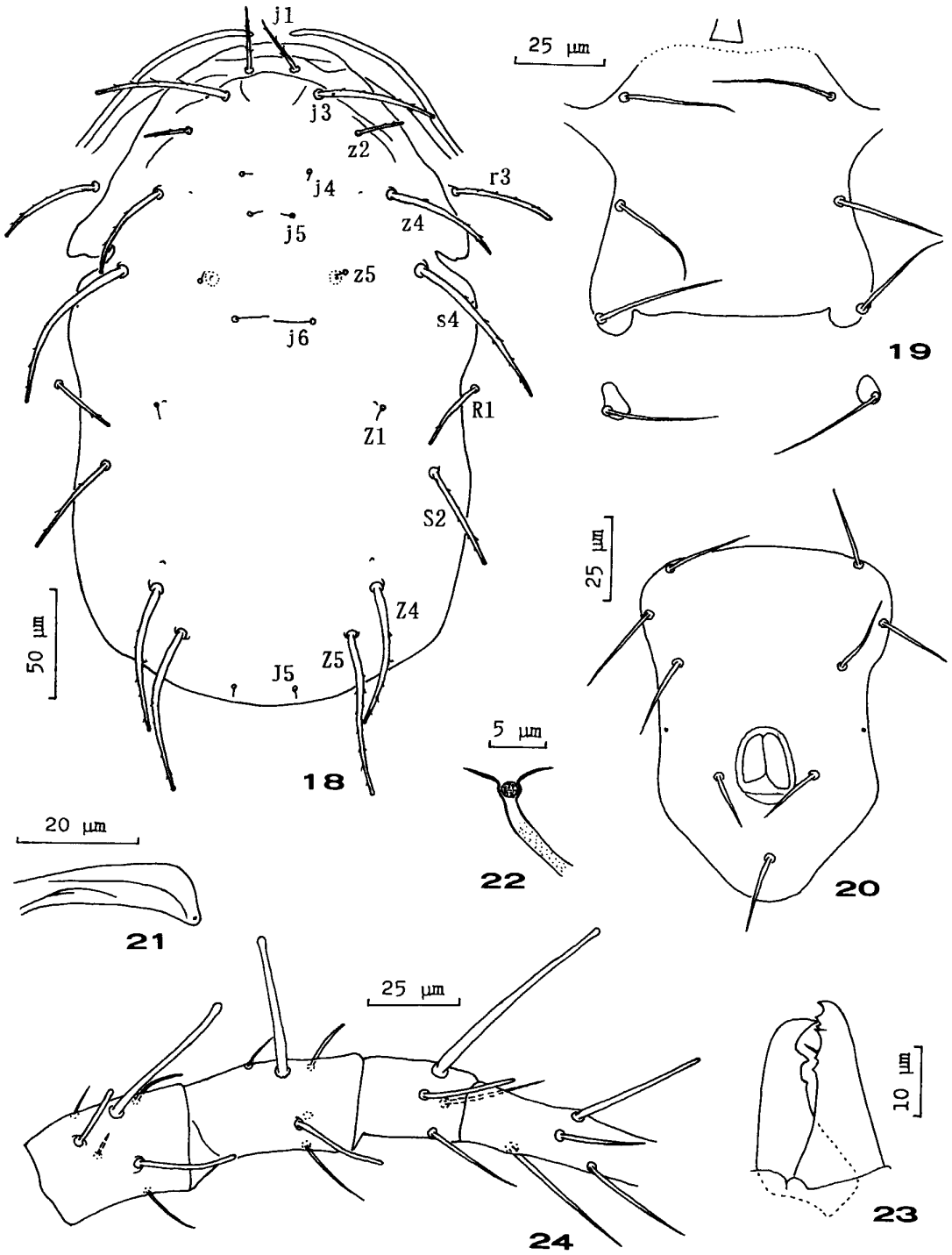
Amblyseiulella thoi sp. nov.
(Figs 18–24)

Female. Dorsal shield incised lateral to seta s4, with few striae along anterior margin, otherwise smooth, with at least 7 pairs of solenostomes (Fig. 18). Setae on dorsal shield: j1, j3, z2, z4, s4, S2, Z4, and Z5 stout, strongly serrate, knobbed, and hyaline-tipped; j6 smaller, stout, smooth; remaining setae minute. Setae r3 and R1 stout, strongly serrate, knobbed, and hyaline-tipped. Peritreme extending in front of seta j1; posterior extension of peritrematal shield with truncate end (Fig. 21). Sternal shield with posterior margin nearly straight or slightly concave, with 3 pairs of setae (Fig. 19). Ventrianal shield much longer than wide, narrower than genital shield, with lateral margins slightly concave (Fig. 20); 3 pairs of preanal setae and pair of minute pores. One pair of very slender metapodal platelets. Spermatheca with disc-like cervix and nodular atrium (Fig. 22). Fixed digit of chelicera with 5 teeth, movable digit bidentate (Fig. 23). Chaetotaxic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Genua I and II each with 1 knobbed, hyaline-tipped macroseta; genu III without macrosetae. Leg IV (Fig. 24) with 1 knobbed, hyaline-tipped macroseta each on genu, tibia, basitarsus, and telotarsus; other dorsal setae on genu, tibia, and basitarsus of leg IV also knobbed or blunt; lateral and ventral setae of podomeres attenuate as usual. Measurements: length of dorsal shield 303, width of dorsal shield 178; lengths of setae (n=6 or 5): j1 30.0 (29.8), j3 57.4 (58.5), j4 6.3 (6.1), j5 6.4 (6.6), j6 16.6 (17.2), J5 4.8 (5.0), z2 20.2 (20.7), z4 49.7 (48.4), z5 6.1 (5.7), Z1 9.2 (9.9), Z4 61.6 (64.0), Z5 73.0 (73.1), s4 76.4 (76.4), S2 48.0 (47.4), r3 46.8 (45.8), R1 32.7 (30.6), JV5 51.9 (54.5), macrosetae on leg IV: genu 41.7 (41.9), tibia 39.6 (38.5), basitarsus 60.8 (57.9), telotarsus 36.0 (35.9).

Male. Not known.

Type series. Holotype: ♀, Kepong (FRIM), Selangor, 11-VIII-1986 (SE), on *Macaranga tanarius* (L.) Muell. Arg. Paratypes: 2♀, with the above data.

Remarks. The female of *Amblyseiulella thoi* sp. nov. closely resembles that of *A. baltazarae* Corpuz-Raros, 1995 from the Philippines (Corpuz-Raros 1995a) but differs in the shape of the chelicera. The fixed digit of the former has three subapi-



Figs 18–24. *Amblyseiulella thoi* sp. nov. (♀). 18, dorsal shield (holotype); 19, sternal shield; 20, ventrianal shield (holotype); 21, caudal termination of peritrematal shield (holotype); 22, spermatheca (holotype); 23, chelicera (holotype); 24, genu, tibia, and tarsus of leg IV (holotype).

cal and two middle teeth, while that of the latter bears only three subapical teeth, as confirmed by examination of some paratype specimens of *A. baltazarae* borrowed from Dr. L. A. Corpuz-Raros.

Etymology. This species is named in honor of the late Dr. Y. P. Tho, Forest Research Institute of Malaysia, Kepong.

Paraphytoseius multidentatus Swirski and Shechter, 1961

Paraphytoseius multidentatus Swirski and Shechter, 1961: 114, figs 7, 26–28; Ehara *et al.* 2000: 116, figs 9–16. [Type loc.: Tai Po, New Territories, Hong Kong; type habitat: *Bambusa* sp.]

Recently a redescription of *P. multidentatus*, with a comparison to *P. cracentis* (Corpuz and Rimando, 1966), was provided by Ehara *et al.* (2000).

Specimens examined. Two ♀, Kepong (FRIM), 11-VIII-1986, on *Macaranga tanarius*.

Distribution. Japan (Honshu, Kyushu, Okinawa Island, Iriomote I.), China, Hainan Island, Taiwan, Malaysia (new record), Philippines, India, Pakistan, Madagascar, Africa, Costa Rica, New Caledonia.

Phytoseius (Phytoseius) hongkongensis Swirski and Shechter, 1961

Phytoseius (*Phytoseius*) *hongkongensis* Swirski and Shechter, 1961: 99, figs 1–5; Amitai and Swirski 1966: 19, fig. 2; Denmark 1966: 44, fig. 17; Ehara and Amano 1998: 50. [Type loc.: Victoria Mt. forest, Hong Kong; type habitat: *Heterosmilax gaudichaudiana* A. DC.]

Phytoseius (*Pennaseius*) *hongkongensis*: Ehara 1966: 25; Ehara and Lee 1971: 70, figs 32–37; Ehara 1972: 169, fig. 81; Ehara and Bhandhufalck 1977: 46; Ehara *et al.* 1994: 145; Ryu 1997: 131, figs 7–15.

Phytoseius hongkongensis: Schicha 1984: 126; 1987: 162, pl. 118; Walter and Beard 1997: 828.

The female of this species is characterized by having the dorsal shield incised lateral to seta r3, and the genual and tibial macrosetae of leg IV notched near their apices.

Specimen examined. One ♀, Kepong, 6-VIII-1986, on *Piper aduncum* L.

Distribution. Japan (Kyushu), Cheju Island, China, Taiwan, Thailand, Malaysia (new record), Madagascar, Papua New Guinea, Australia.

Phytoseius (Dubininellus) brevicrinis Swirski and Shechter, 1961

Phytoseius (*Dubininellus*) *brevicrinis* Swirski and Shechter, 1961: 106, figs 14–16; Amitai and Swirski 1966: 21, fig. 5; Denmark 1966: 96, fig. 41. [Type loc.: Tai Po, New Territories, Hong Kong; type habitat: *Bambusa* sp.]

Phytoseius (*Phytoseius*) *brevicrinis*: Ehara 1966: 26; Ehara and Bhandhufalck 1977:

46, figs 6–13.
Phytoseius brevicrinis: Corpuz-Raros and Garcia 1994b: 475, fig. 1.

This species is characterized by having seta Z4 noticeably narrower than Z5, and very weakly barbed.

Specimens examined. Two ♀, Kepong (FRIM), 5-VIII-1986, on *Bambusa vulgaris* Schrad., 1♀, 20-VIII-1986, other data as for the above; 18♀ and 4♂, Kepong (FRIM), 7-VIII-1986, on *Gigantochloa levis*; 3♀, 8-VIII-1986, 4♀, 11-VIII-1986, other data as for the above; 4♀, Port Dickson, 16-VIII-1986, on *Bambusa glaucescens* (Willd.) Merr.; 6♀, campus of Univ. of Malaya, Kuala Lumpur, 25-VIII-1986, on a bamboo.

Distribution. China, Thailand, Malaysia (new record), Philippines.

Phytoseius (Dubininellus) hawaiiensis Prasad, 1968

Phytoseius hawaiiensis Prasad, 1968: 1460, figs 7–11; Schicha 1987: 160, pl. 115; Corpuz-Raros and Garcia 1994a: 368, fig. 5; Walter and Beard 1997: 836. [Type loc.: Manoa, Oahu, Hawaii; type habitat: poinsettia]
Phytoseius (Phytoseius) hawaiiensis: Ehara and Bhandhufalck 1977: 48, figs 14–21.
Phytoseius (Phytoseius) huangi Ehara, 1970: 62, figs 19–22. [Type loc.: Fengshan, Taiwan; type habitat: *Pithecolobium dulce* Benth.] **New synonymy**.

This species is distinctive in having setae s4, s6, Z4, and Z5 with fin-like marginal parts (Ehara and Bhandhufalck 1977).

Specimens examined. Seven ♀, Port Dickson, 17-VIII-1986, on *Derris* sp.

Distribution. China, Hainan Island, Taiwan, Thailand, Malaysia (new record), Singapore, Philippines, Mauritius, Papua New Guinea, Australia, Hawaii, Tahiti.

Genus ***Platyseiella*** Muma, 1961

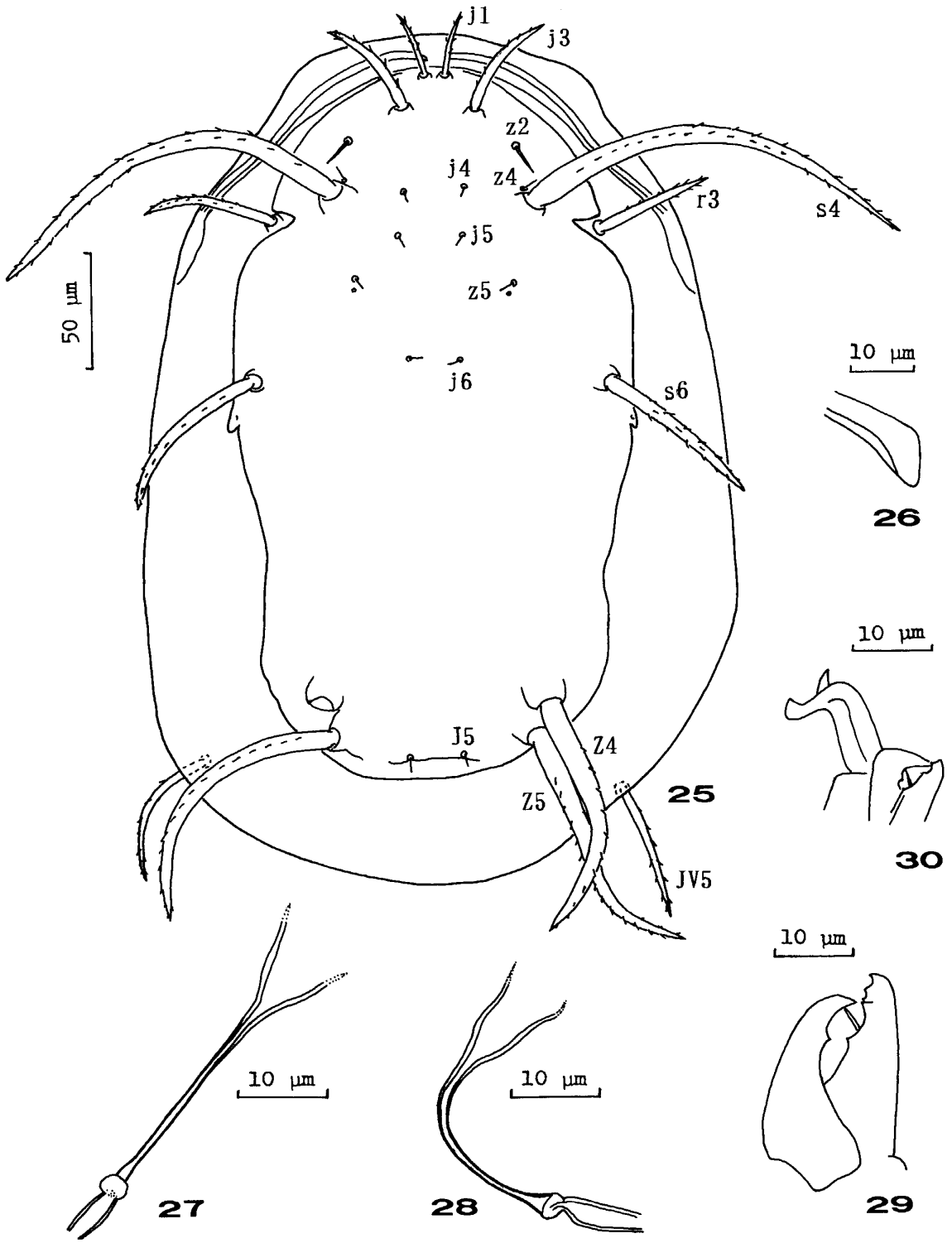
Platyseiella Muma, 1961: 280; Chant and McMurtry 1994: 233.

Type species: *Phytoseius (Dubininellus) platypilis* Chant, 1959, by original disignation.

Setae z3 and z6 absent; seta s6 present. Genu II with 7 setae.

Platyseiella acuta sp. nov.
(Figs 25–34)

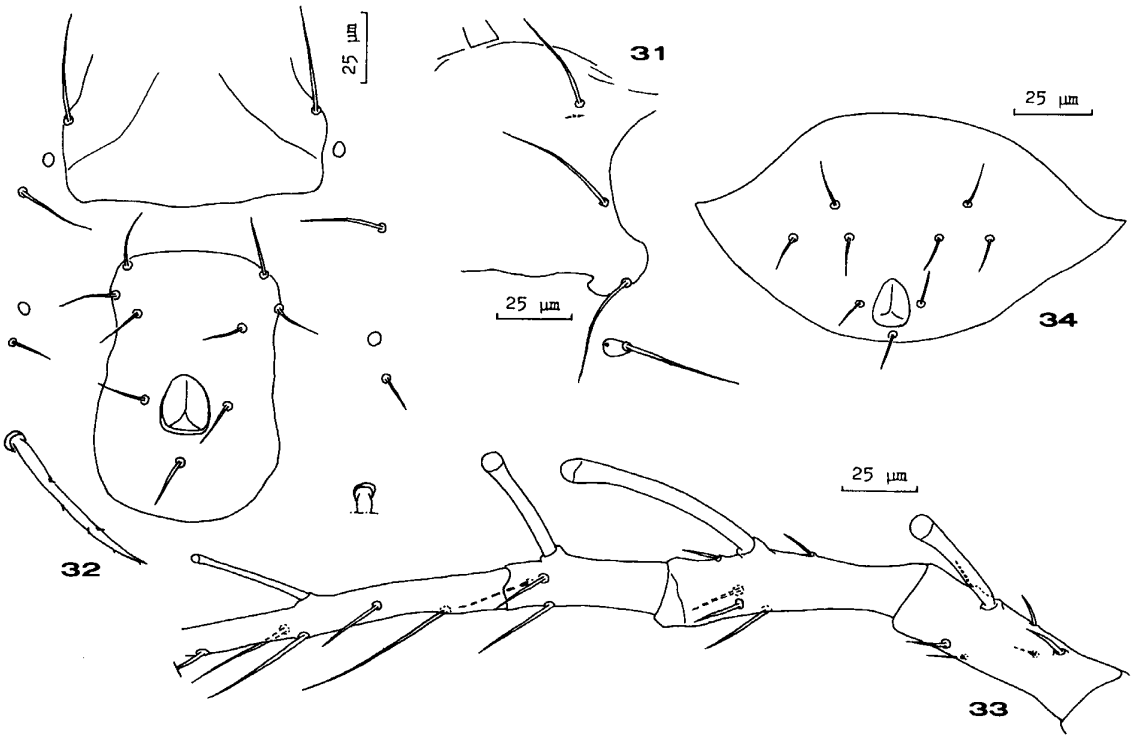
Female. Dorsal shield smooth, acutely incised near setae r3 on membrane; 2 pairs of obvious solenostomes (Fig. 25). Setae R1 absent. Dorsal setae on idiosoma: j1, j3, s4, s6, Z4, Z5, and r3 stout, strongly serrate; remaining setae much shorter, practically smooth; s4 much longer than distance between its base and that of s6; j3 slightly shorter than, or as long as, r3. Peritreme extending in front of seta j1; peri-



Figs 25–30. *Platyseiella acuta* sp. nov. 25, dorsum of idiosoma (♀, holotype); 26, caudal termination of peritrematal shield (♀); 27, 28, spermatheca; 29, chelicera (♀); 30, chelicera (♂).

trematal shield with caudal termination very slender (Fig. 26). Sternal shield with posterior margin nearly straight except for lateral lobes, with 3 pairs of setae (Fig. 31). Ventrianal shield much longer than wide, and much narrower than genital shield, with slightly concave lateral margins (Fig. 32); 3 pairs of preanal setae; no visible pores. One pair of slender metapodal platelets. Spermathecal cervix fundibular, with neck very long; atrium nodular (Figs 27, 28). Fixed digit of chelicera with 3 subapical teeth and 1 (or 2) middle tooth; movable digit unidentate (Fig. 29). Chaetotaxic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/0, 2/0-1. Leg IV with 1 spatulate, hyaline-tipped macroseta each on genu, tibia, basitarsus, and telotarsus (Fig. 33). Measurements: length of idiosoma 313, width of idiosoma 205, length of dorsal shield 293, width of dorsal shield 160; lengths of setae (mean±SE, n=10): j1 29.5±0.5 (29.8), j3 45.9±0.6 (45.0), j4 5.5±0.2 (5.4), j5 5.8±0.2 (5.8), j6 6.1±0.1 (5.8), J5 6.8±0.2 (6.6), z2 13.8±0.4 (14.3), z4 (n=2) 7.6, z5 6.2±0.1 (6.2), Z4 99.4±1.4 (103.7), Z5 (n=8) 111.6±1.6 (114.9), s4 158.5±2.7 (162.8), s6 72.0±0.8 (73.1), r3 51.3±0.5 (51.7), JV5 56.8±1.4 (59.3), macrosetae on leg IV: genu 32.8±0.5 (35.5), tibia 56.9±1.0 (60.5), basitarsus 33.8±0.6 (35.5), telotarsus 32.2±0.7 (35.5).

Male. Dorsal shield without lateral incisions, carrying seta r3. Peritreme extending in front of seta j1. Ventrianal shield not fused with peritrematal shield, with 3 pairs of preanal setae (Fig. 34). Fixed digit of chelicera with at least 3 teeth; movable digit unidentate; spermatodactyl as figured (Fig. 30). Measurements: length of idiosoma 228, width of idiosoma 158, length of dorsal shield 210, width of dorsal shield 138; lengths of setae (n=6): j1 22.1, j3 36.7, j4 3.2, j5 4.3, j6 4.9, J5 5.5, z2 9.1, z4 2.4, z5 4.8, Z4 59.4, Z5 49.1, s4 107.2, s6 45.8, r3 38.0, JV5 16.1, macrosetae on leg IV genu 21.8, tibia 32.7, basitarsus 22.2, telotarsus 26.8.



Figs 31–34. *Platyseiella acuta* sp. nov. 31, sternal shield; 32, posterior ventral surface (♀); 33, tarsus, tibia, and genu of leg IV (♀, holotype); 34, ventrianal shield (♂).

Type series. Holotype: ♀, Kepong, Selangor, 6-VIII-1986 (SE), on *Piper aduncum*. Paratypes: 11♀ and 3♂, with the above data.

Remarks. The female of *Platyseiella acuta* sp. nov. is very close to that of *P. longicervicalis* (Moraes and Denmark, 1989) (cf. Moraes *et al.* 1989) from Thailand but is distinctive in having the dorsal shield with an acute incision mesial to seta r3, and in this seta being set on the interscutal membrane. The male of *P. acuta* sp. nov. can be separated from that of the latter species by having four instead of three macrosetae on leg IV. This new species is the second member assigned to the *longicervicalis* species group of *Platyseiella* (Chant and McMurtry 1994).

Etymology. Referring to the acute lateral incisions of the female's dorsal shield.

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